

Climate Protection Plan Summary

Why Cambridge Should Address Global Climate Change

The International Panel on Climate Change, a United Nations advisory body involving about 2,500 scientists around the world, and the U.S. National Academy of Sciences have both issued findings that global climate change is happening and that greenhouse gas emissions from human activities play a significant role.

The debate over climate change is no longer about whether it is happening but about how fast it is happening, what the impacts will be, and what to do about it.

The evidence of climate change is seen in the measured increase of carbon dioxide and other greenhouse gases in the atmosphere, rising average temperatures, and rising sea level.

While climate change is a worldwide phenomenon, the impacts will be felt locally. The New England Regional Assessment prepared by the federal government predicts that average temperatures in our region will increase from 6 to 10 degrees F within the next 100 years. At the lower level, our climate will shift to one more like Richmond, Virginia. At the upper level, it would be more like Atlanta, Georgia. The impact of climate change will involve more than hotter temperatures. Among other effects, it will create habitat for disease-carrying insects that do not occur here now; change rain and snowfall patterns, affecting water supplies, agriculture, and the frequency of flooding; cause changes in natural habitats that will eliminate some species from our area and introduce new ones; and cause sea-level rise and greater coastal storm damage. Local and state governments, businesses, institutions, and citizens will bear the brunt of adapting to these changes through payment for public works projects, insurance premiums, and disaster response.

How Cambridge is Responding

In May 1999, the City Council voted to join Cities for Climate Protection (CCP), an international consortium of communities working to reduce the emission of greenhouse gases. CCP is a project of the International Council for Local Environmental Initiatives (ICLEI), which is an association of hundreds of local governments working on environmental problems. As of October 2002, 18 Massachusetts communities had joined CCP. Since joining, Cambridge has inventoried its 1990 and 1998 greenhouse gas emissions and written this plan, which includes a proposed emissions reduction target and recommendations to reduce emissions.

It is understood that any actions taken by Cambridge alone would have a small effect on climate change. This plan is an effort by Cambridge to take responsibility for its share of the problem and to demonstrate that taking action is feasible and desirable. By joining with other communities around the world, we hope to contribute to a cumulative solution to climate change.

Cambridge's Greenhouse Gas Emissions

The greenhouse gas (GHG) emissions inventory indicates that most of Cambridge's contribution to climate change is associated with energy use in buildings. Fuel oil, natural gas, and electricity used to heat and cool buildings and to run machinery and equipment account for nearly two-thirds of our GHG emissions. Transportation, primarily in the form of gasoline use, is a smaller source of emissions compared to elsewhere in the country because Cambridge has such a large commercial sector, is a compact area that facilitates walking and biking, and has an extensive public transit system. The contribution to GHG emissions from disposal of solid waste is a small, but important, source as well.

GHG Emissions Reduction Goal

The climate protection plan proposes that we reduce GHG emissions by 20 percent below 1990 levels. This means the community needs to reduce and prevent annual GHG emissions of 494,400 tons of carbon dioxide. The 20 percent target is typical of those set by other CCP communities.

Many scientists indicate that far greater worldwide reductions, in the realm of 75 to 85 percent, will be necessary to stabilize the concentration of greenhouse gases in the atmosphere. At present, we do not know how to achieve such a reduction without considerable social disruption. However, the plan proposes that we begin by undertaking actions that are feasible now and that for the most part provide multiple benefits.

Vision and Strategies

The vision of this plan is for Cambridge to be smarter and more resourceful about the manner in which its buildings use energy, people and goods are transported, and waste is managed. Cambridge is in a position to apply many existing technologies and approaches to tackle this problem and to take advantage of emerging trends and resources in energy, transportation, land use, and waste management that hold promise to change for the better the way our city works and the way we live. By undertaking the actions in the plan, Cambridge can reverse the trend of increasing GHG emissions and begin to reduce our annual emissions.

The plan proposes strategies based on increasing energy efficiency, switching to renewable energy sources, reducing vehicle miles traveled, and reducing the generation of solid waste. Some of the reductions are not in Cambridge's control and depend on action at the federal or state level. The City can play an advocacy role in these cases. The following table summarizes the strategies. Estimates are largely based on projections from other sources.

Summary of GHG Reduction Strategies

- Improve efficiency of electricity use by 12.5%.
- Reduce natural gas and fuel oil use by 10%.
- Reduce emissions associated with electricity generation by 40%.
- Purchase 20% of electricity from green power sources.
- Increase average fuel economy to 40 MPG.
- Reduce vehicle miles traveled by 10%.
- Increase recycling rate to 60%.

While these strategies are focused on reducing greenhouse gas emissions, they will have added benefits including reduced conventional air pollution (i.e., smog), savings on utility and fuel bills, reduced traffic congestion, conservation of natural resources, and other positive effects.

The strategies will be put into effect through actions on energy, transportation, land use, and waste management. The full plan describes the existing situation in each area, available tools and resources, and actions. The following is a summary.

Proposed Actions

Energy

Cambridge relies on electricity, natural gas, and fuel oil for energy. Almost all of this energy is imported. Electricity comes from generating facilities throughout the Northeast and eastern Canada and is delivered to the city over a network or transmission grid. Natural gas is delivered from an even wider area through pipelines. Independent dealers deliver fuel oil.

Improve energy efficiency. Institute an energy management system for municipal facilities; recruit businesses and institutions into the EPA Energy Star program; help residents carry out efficiency and other measures; utilize energy service companies and performance contracting; take greater advantage of utility energy conservation programs; implement purchasing policies to favor energy efficient equipment.

Green the Electricity Fuel Mix. Promote replacement of electric generating facilities fueled by coal and oil by supporting a federal and state renewable portfolio standard; support federal legislation to regulate carbon dioxide emissions from power plants.

Buy Green Power. Purchase green power for the municipal electric load and encourage green power purchasing by businesses, institutions, and households; install renewable energy systems and fuel cells to improve electric system reliability; reduce reliance on imported oil and encourage clean sources of energy; work to provide options to businesses, institutions, and residents to purchase green electricity through such steps as consumer aggregations.

Expand District Steam. District steam produces fewer GHG emissions than individual boilers and furnaces. The existing district steam system in eastern Cambridge, which is supplied by Mirant's Kendall Square Station power plant, has additional capacity. Efforts should be made to extend the distribution system and add customers.

Transportation

Emissions from transportation come from vehicles that use gasoline and diesel. The amount of emissions is a function of the fuel economy of the vehicle and the number of miles traveled. The current trend is toward lower fuel economy and more vehicle miles traveled, which means more emissions of GHGs and other air pollutants. Car ownership is increasing at a faster rate than the population.

Reduce SOV commuting. Continue and expand measures to reduce commuting by single-occupancy vehicles (SOVs) and encourage alternative modes of transport; continue to implement the Vehicle Trip Reduction Ordinance; and enforce the Parking and Transportation Demand Management Ordinance.

Improve facilities for walking and cycling. Install more bicycle lanes and parking facilities; create and improve off-road paths including railroad rights-of-way; expand efforts to retrofit streets and intersections to better accommodate bicycles and pedestrians.

Reduce motor vehicle travel with promotion and education programs. Conduct information and promotion programs to encourage alternative modes of travel; establish a bicycle-sharing program.

Reduce motor vehicle emissions. Acquire alternative fuel and hybrid vehicles; develop a municipal green fleet policy; install emission controls on heavy-duty vehicles; establish a compressed natural gas refueling station; discourage idling.

Promote Transit Improvements. Support extension of the Green Line, acquisition of alternative fuel buses, and plans for the Urban Ring.

Land Use

Urban form—the layout of our streets and parcels, design of buildings, and distribution of open space—affects how much energy buildings use, how easy it is to use alternatives to cars, and other factors that influence GHG emissions.

Use zoning and incentives to foster mixed-used, transit-oriented development. Encourage denser development near transit stations; design durable buildings with flexible re-use options; use permitting and incentives to create more open space and plant more trees; carry out the Green Ribbon Commission's open space recommendations.

Optimize building design and the use of vegetation to shade buildings and reduce the urban heat island effect. Use geographic information systems to map the city's tree canopy coverage and assess the environmental services provided by the urban forest; maximize the tree canopy cover, particularly over parking lots and air-conditioning units; install roofs with high reflectance or “green” landscaped roofs; incorporate reflectance and shading standards in designs for parking lots and building construction.

Promote the design and construction of “green buildings.” Encourage the use of the Leadership in Energy and Environmental Design (LEED) green building standards through zoning incentives and requirements; provide information to developers and citizens to facilitate the use of LEED; encourage reuse of materials from existing structures during renovation and redevelopment.

Work for transit-oriented regional land use planning. Work with public officials in other communities to create an effective regional land use plan; actively participate in regional land use planning processes.

Waste Management

The disposal of waste results in the direct emission of greenhouse gases when it is burned in incinerators and when it degrades in landfills and produces methane. The manufacturing, processing, and transporting of new goods also create emissions. GHG emissions are the result of the amount of material that is consumed and the amount that is disposed of at landfills and incinerators.

Prevent waste. Implement waste prevention programs at the municipal, business, and institutional levels; increase the rate of recycling; increase food composting by commercial and institutional establishments; facilitate recycling of construction debris and waste.

Do environmentally preferable purchasing. Assess and improve existing municipal purchasing policies to increase the use of recycled paper and other products.

Implementation

Cambridge has a multitude of opportunities to reduce greenhouse gas emissions. The challenge is to marshal the people, resources, funds, and knowledge to act on this problem in a focused and sustained way. This plan recognizes that reducing greenhouse gas emissions needs to be a community-wide process that involves all sectors—residents, businesses, institutions, and government.

The main elements of the plan's implementation strategy are:

Provide City leadership. The City will undertake actions to reduce GHG emissions by improving the energy efficiency of municipal buildings, installing renewable energy systems and purchasing green power; increasing the fuel economy of the City vehicle fleet, introducing sustainable practices into City work, and reducing waste.

Undertake a citywide campaign. A campaign is needed to draw all sectors together in a common effort to reduce greenhouse gas emissions. Such a campaign should engage all stakeholders in the community and could include a marketing campaign; a community organization to coordinate activities; publications and other informational material for each stakeholder group; public recognition of notable accomplishments; and a means for the community to see whether progress is being made.

Build on Existing Efforts. There are many efforts already underway in Cambridge aimed at the goals of climate protection. Businesses are constructing green buildings, installing renewable energy systems, participating in transportation demand management programs, and reducing waste. Universities have created green campus programs to assess their GHG emissions and develop more sustainable practices. The faith community has launched programs to improve the energy efficiency of places of worship and to involve congregations in living more sustainably. Numerous community organizations active in Cambridge have related goals and programs. Other communities in Massachusetts, the United States, and abroad are involved in Cities for Climate Protection and offer opportunities for learning and partnership.

Monitor Progress. Indicators such as energy use, transportation factors, and waste volumes should be tracked and reported at regular intervals to assess progress toward the emissions reduction target.

Establish a Coordinating Committee. The City should establish a standing committee to monitor progress and advise the City Administration on implementation of the plan.